

eKo IHD User Manual



Using this Manual

Thank you for purchasing the eKo ZigBee In-Home Display.

The eKo IHD enables you to monitor your energy usage in real time and better manage your energy bill.

This manual has been specially designed to guide you through the functions and features of your device.

Read me first

- Before using your device, read the entire manual and all safety instructions to ensure safe and proper use.
- The descriptions in this manual are based on the default settings of your device.
- The images and screenshots used in this manual may differ from the actual product.
- The contents of this manual may differ from the product and are subject to change without prior notice. Access the EnergyTotem website (www.energytotem.com) for the latest version of the manual.
- You may incur additional charges for services, such as binding and messaging. For details, contact your service provider.
- Please keep this manual for future reference.

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ZigBee®
Certified product



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1. Assembling

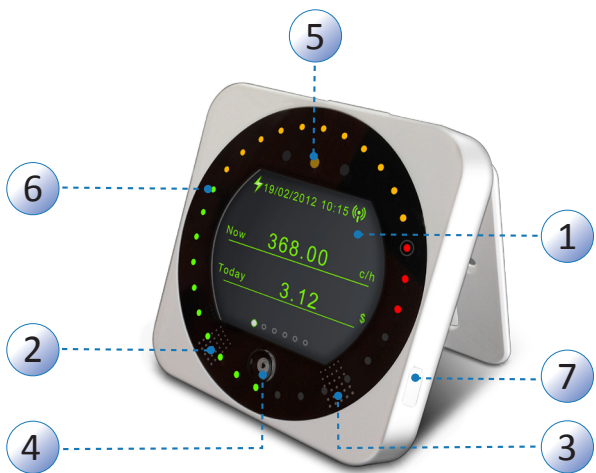
1.1 Unpack

Check your product box for the following items:

- eKo IHD device
 - Power adaptor
 - Quick start guide
-  • Use only Intercel approved accessories. Unapproved accessories may cause your device to malfunction.
-  • The supplied items are designed only for your device and may not be compatible with other devices.

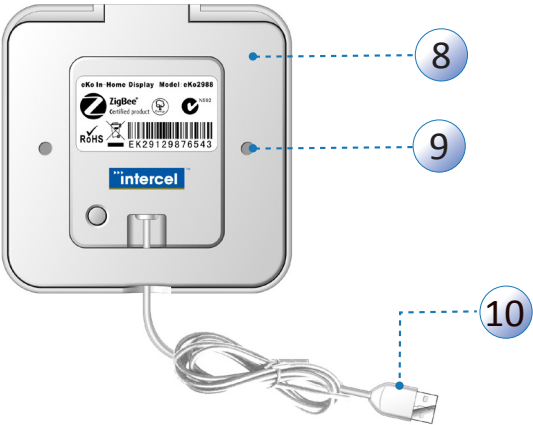
1.2 Device layout

1.2.1 Front view



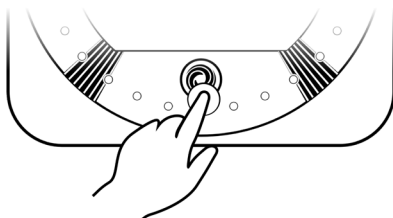
Number	Function
1	Colour screen
2	Left navigation touch pad
3	Right navigation touch pad
4	Menu/set button
5	Instantaneous/real time power cost indicator
6	Daily cost gauge
7	Micro USB port

1.2.2 Rear view



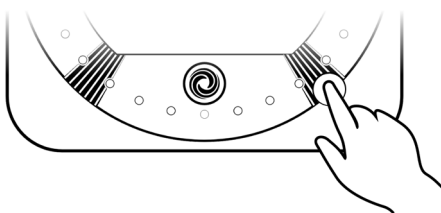
Number	Function
8	Stand
9	Wall mounting hole
10	USB power cable

2. User interface



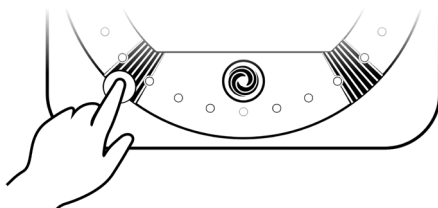
Press the menu/set button to:

- Access the function menu
- Confirm and set settings
- Acknowledge messages



Tap the right navigation touch pad to:

- Switch to the next screen
- Select the next option
- Increase the parameter value
- Enable a function



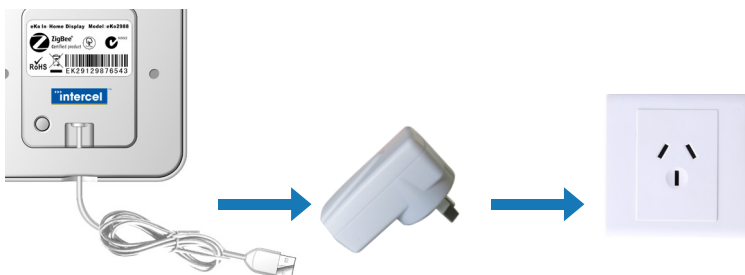
Tap the left navigation touch pad to:

- Switch to the previous screen
- Select the previous option
- Decrease the parameter value
- Disable a function

3. Bind the eKo to your smart meter

Before you can start using the IHD, you need to bind it to your electricity meter, by following these simple steps:

3.1 Power on your eKo



The eKo will display a screen like this below



3.2 Contact your eKo IHD supplier

Contact your IHD supplier to initiate the binding process. You will need to provide the following information:

- National Meter Identifier (NMI): this can be found on your electricity bill
- Meter Serial Number: this can be found on your electricity bill
- eKo MAC Address: this is displayed on your eKo screen
- eKo Installation Code: this is displayed on your eKo screen

3.3 Bind the eKo to your smart meter



Press the menu/set button to start the binding sequence.

The connection process will take up to 5 minutes to complete depending on the signal condition of the smart meter.

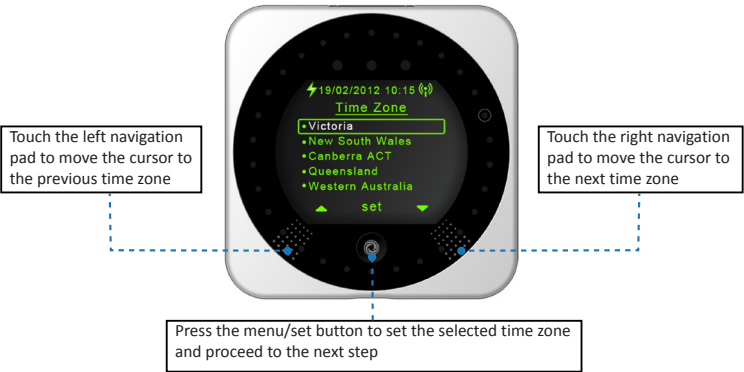
4. eKo configuration wizard

Now that the eKo is bound to your smart meter, please use information provided on your recent electricity bill to properly set the following required parameters. The eKo works best if you set the correct information.

If you do not have a bill handy, leave the default values. You can always come back and change them in the Settings. Please refer to section 8 Settings.

4.1 Set time zone

If you have previously selected a Time Zone, the selected zone will be highlighted for your reference.



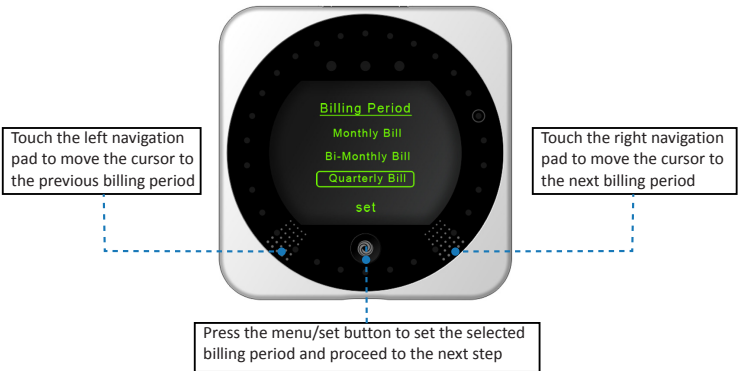
You can always come back to change the time zone. Please refer to section 8 Settings.

4.2 Set billing period

You can find your billing period on the electricity bill.

4.2.1 Choose billing period

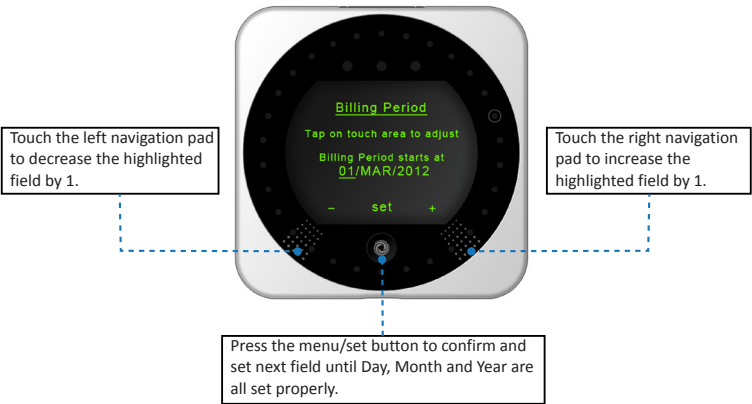
Your billing period can be monthly, bi-monthly or quarterly.



You can always come back to change the billing period. Please refer to section 8 Settings.

4.2.2 Set current billing start date

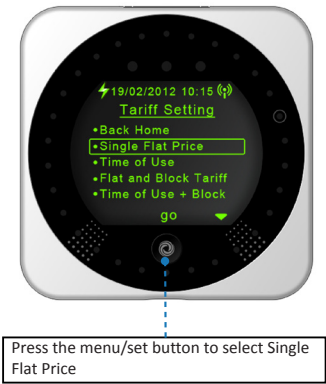
You can find the start date of your current billing period on the electricity bill. To accurately predict your current bill, you need to set the start date of the current billing period.



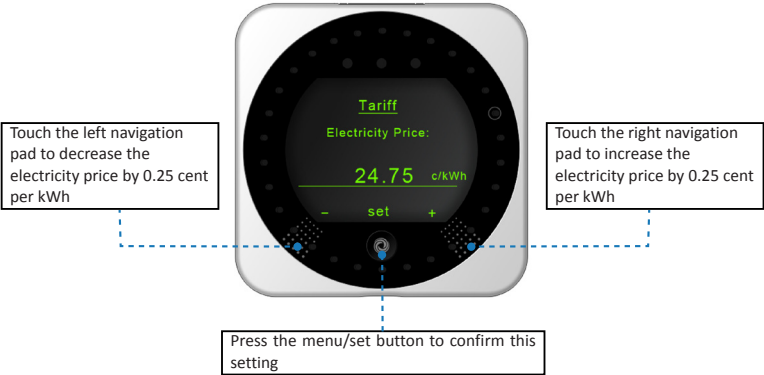
You can always come back to change the billing period start date. Please refer to section 8 Settings.

4.3 Set tariff

You can find your tariff on the electricity bill paper. In order to get accurate electricity cost information, you need to set the tariff.



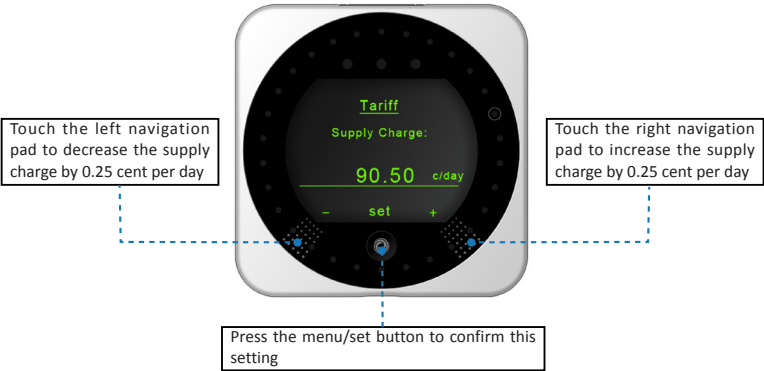
In this section, we set the Single Flat Price. You can always come back to change the tariff. Please refer to section 8 Settings.



4.4 Set the supply charge

You may not be able to find the supply charge directly on your electricity bill paper. Please divide the Service to Property charge by the number of days for this billing period.

In order to get accurate electricity cost information, you need to set the supply charge.

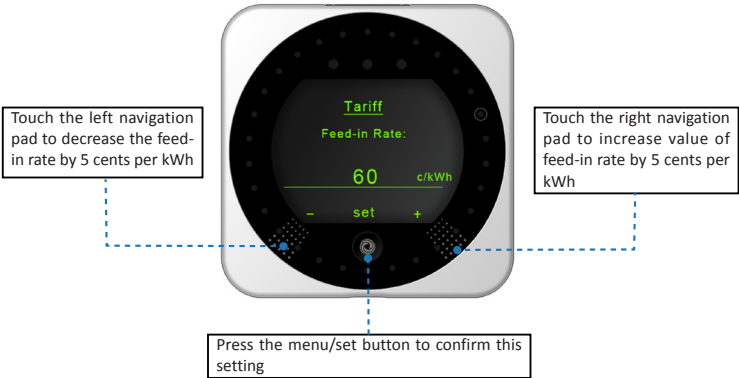


4.5 Set feed-in rate

If you have solar panel or wind mill installed, you will see this setting screen. Otherwise, go to section 4.6 Set Budget.

In order to get accurate electricity generation information, you need to set the feed-in rate.

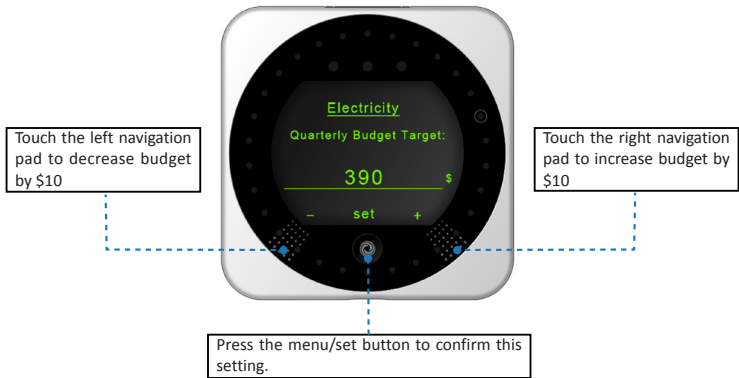
You can find your feed-in rate on the electricity bill.



You can always come back to change the feed-in rate. Please refer to section 8 Settings.

4.6 Set budget

The eKo IHD helps you manage your electricity spend better by setting up a budget.



You can always come back to change the budget. Please refer to section 8 Settings.

4.7 Finish the configuration

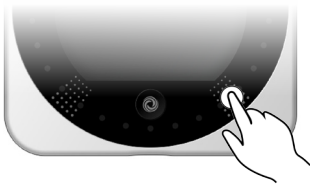


Press the menu/set button to confirm this notification

Congratulations! You have completed the binding and configuration steps. You can now start using your eKo IHD.

5. Get to know the home screens

Home screens are a collection of most frequently used functions. You can switch between home screens by tapping the right navigation touch pad.



5.1 Cost

Electricity cost home screen shows you the current power cost.



Take the screenshot above as an example:

- 1. Your current consumption is 68.00 cents per hour
- 2. You have used \$3.12 so far today

5.2 Consumption

Electricity usage home screen shows you the current power consumption.



Take the screenshot above as an example:

- 1. Your current consumption is 2.06 kilowatts
- 2. You have used 5.6 kilowatt hour so far today

5.3 Instantaneous/Real time LED indicator

3 colour LEDs show the level of current power usage.



	Green: Low usage
	Yellow: Medium usage
	Red: High usage

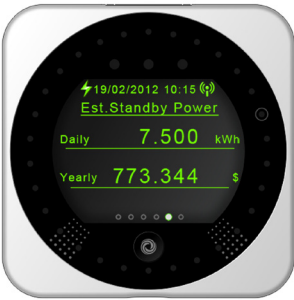
5.4 Daily electricity spending gauge

The eKo shows the daily electricity spend on the 30 LEDs gauge. It helps you manage your electricity spend on a daily basis.

Meaning	eKo Gauge
Under budget Today, you have used 31% of your daily budget	
Near budget Today, you have used 72% of your daily budget	
On budget Today, you have used 100% of your daily budget	
Over budget Today, you have used 130% of your daily budget	

5.5 Estimated standby power

Recent in-home studies show the average household has a lot of plug-in appliances, many consuming power while performing no function most of the time. This “standby” power is estimated to account for up to 9% of your home’s electricity consumption! Reducing this waste can reduce your electricity bill. The eKo can measure and estimate your standby power.



5.6 Predicted bill

eKo is able to predict your next bill based on your historical power usage pattern. By knowing this, you can decide how you would use electricity for the rest of the billing period.



5.7 Tariff screen

eKo supports multiple tariff types, including flexible pricing.



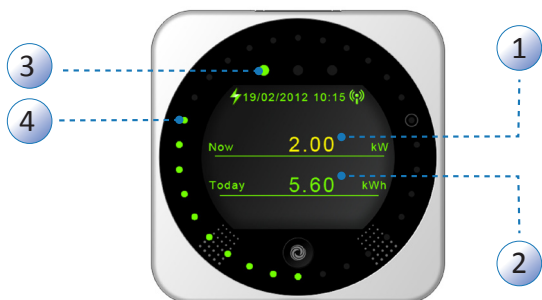
Take the screenshot above as an example:

- 1. Current electricity price is 12.50 cents per kilowatt hour
- 2. Next electricity price will be 45.75 cents per kilowatt hour
- 3. Next price will be enabled at 15:00 19 Feb 2012

6. Electricity exported(solar panel and wind mill)

If you have a solar panel or wind mill installed at home, the generated electricity can be exported to the grid. The eKo IHD is able to show you the real time power being exported to the grid.

6.1 Real time energy exported



Take the screenshot above as an example:

1. Instantaneous display

If the solar panel is generating 3 kW and you are only using 1 kW at home, then you are exporting 2 kW to the grid. The eKo shows a yellow coloured text which indicates exporting.

2. Daily display

This field does not show how much electricity you have exported, it only shows the energy consumed from the grid.

3. Instantaneous/Real time power cost LED indicator

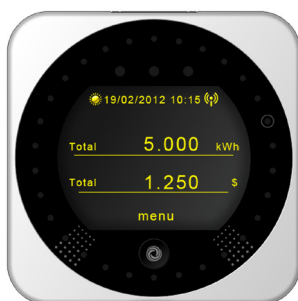
This LED stays green when you are exporting electricity.

4. Daily electricity spending gauge

This ring of 30 LED lights does not show how much electricity you have exported to the grid, it only shows the energy consumed from the grid compared with your daily budget.

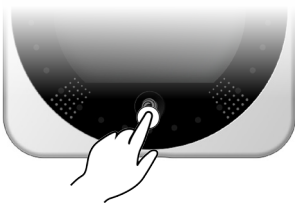
6.2 Accumulated energy exported

The eKo can display the accumulated energy exported since the solar panel or wind mill has been installed. You can access it by clicking the menu button



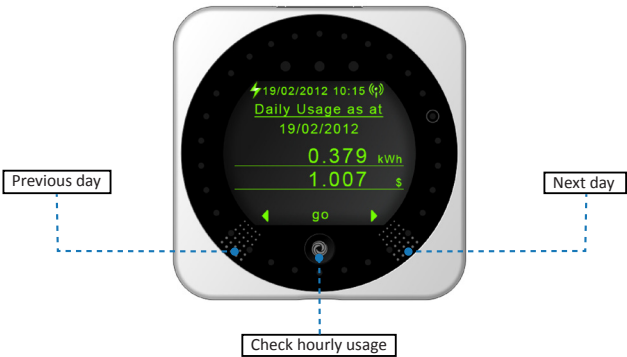
7. Extra features

Other features are available on the menu screen. You can access the menu by pressing the Menu/Set button and select the feature by tapping left or right on the navigation touch pad.



7.1 Historical usage

eKo records your power usage into its internal memory. It is simple to check how much power you consumed in the past.



7.2 Carbon foot print

Electricity use generates carbon dioxide which damages the environment. The eKo shows you how much carbon dioxide is generated.



7.3 Message box

The eKo is able to receive text messages from your electricity supplier, if supported by your electricity supplier.

When the eKo receives a message, a text message pops up on the screen. You can also check the latest 5 text messages in the message box.



7.4 Water

If you have a ZigBee smart water meter installed, the eKo can display your water consumption.



8. Settings

You can configure your IHD by selecting “Settings” in the eKo menu.

8.1 Electricity

8.1.1 Billing period

To set your electricity billing period, go to:

Menu→ Settings → Electricity → Billing Period

8.1.2 Tariff setting

To set your electricity tariff, go to:

Menu→ Settings → Electricity → Tariff Setting

8.1.2.2 Set Time of Use rate

To set your electricity time of use rate, go to

Menu→ Settings→ Electricity→ Tariff Setting→ Time of Use

1. Specify number of price tiers
2. Define days which share the same tariff structure, for example week days
3. Define hours with the same price tier
4. Set the price of this price tier

If you need help, please refer to Appendix A or the video tutorial <http://youtu.be/FHvL6WnrzS4> or contact your IHD supplier.

8.1.3 Budget setting

To set your budget, go to:

Menu→ Settings → Electricity→ Budget Setting

8.1.4 Meter information

To view meter MAC address and accumulated metering information, go to:

Menu→ Settings→ IHD→ Meter information

8.2 IHD

8.2.1 Home screen

The eKo allows you to set the home screen of your choice. To set your home screen, go to:

Menu→ Settings→ IHD→ Home Screen

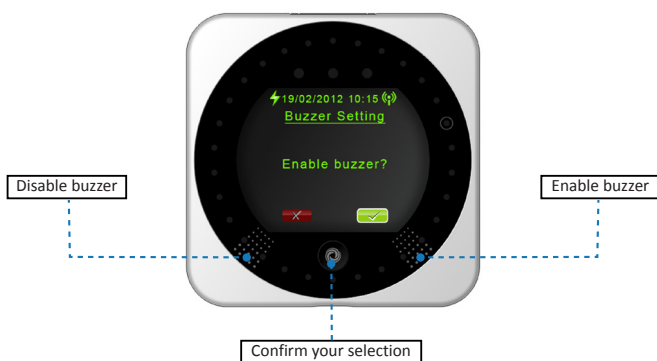
You can set your home screen to the following:

- Cost: only shows your power usage in dollar format
- Consumption: only shows your power usage in kWh format
- Switch every __ s: automatically switches between cost and consumption every 10 to 60 seconds
- 12 Hr clock: shows 12 hour clock format
- 24 Hr clock: shows 24 hour clock format

8.2.2 Buzzer setting

To disable or enable the eKo buzzer, go to:

Menu→ Settings→ IHD→ Buzzer



8.2.3 Sleep mode

To disable or enable the eKo screen sleep mode.

Menu→ Settings→ IHD→ Sleep mode



8.2.4 Time zone

To change the eKo's time zone setting, go to

Menu→ Settings→ IHD→ Time zone

8.2.5 Erase consumption data

To erase the eKo's memory, go to:

Menu→ Settings→ IHD→ Erase consumption data

8.2.6 Reset to factory default

To erase the eKo settings back to factory default, go to:

Menu→ Settings→ IHD→ Reset to factory default

8.2.7 IHD information

To check the device firmware version, serial number, MAC address and installation code, go to:

Menu→ Settings→ IHD→ IHD information

8.3 Water

8.3.1 Meter information

To view the meter MAC address and accumulated metering information, go to:

Menu→ Settings→ IHD→ Meter information

9. Un-bind the eKo IHD

You need to unbind the eKo IHD before you move out.

- If you have access to an energy web portal, please log on to disconnect and remove you eKo from the device list.
- If you do not have access to an energy web portal, please contact your eKo IHD supplier to un-bind it from your smart meter.

The eKo will notify you that it has been removed from the network.

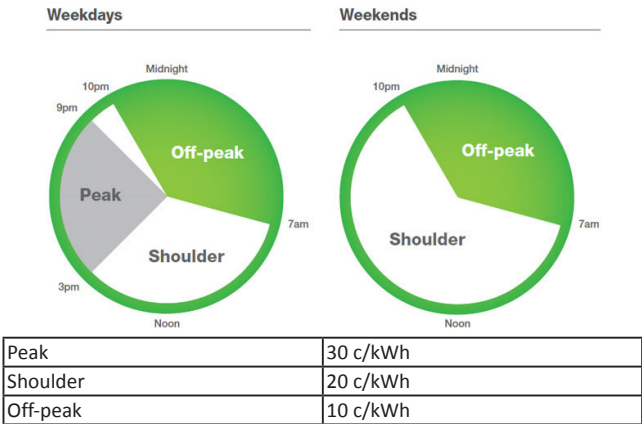


Once it has been successfully removed from the network,it is ready to bind with another meter.

Appendix

Appendix A: Example of Setting Time of Use

In this example, we set a flexible price based on the following tariff structure:



1. Specify number of price tiers

In this example, there are 3 different price tiers (peak, shoulder and off-peak).



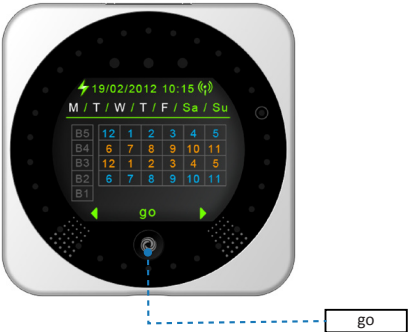
2. Select days

Because weekdays share the same tariff structure, select all weekdays to group them together.



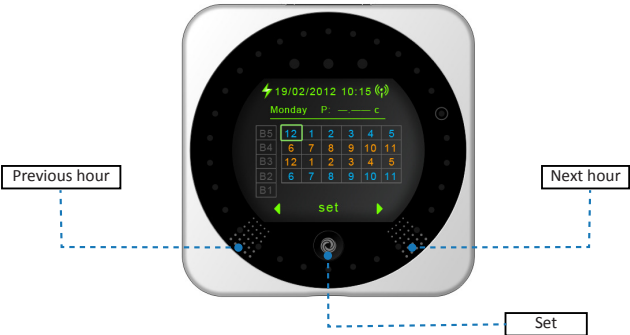
3. Confirm the group of days

Move the cursor out of days, the “set” button will change to “go”.



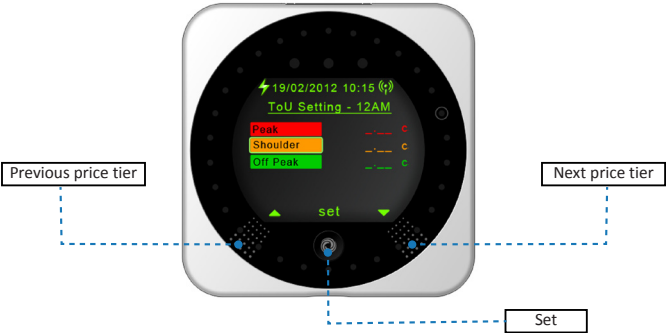
4. Set the start time of the flexible price

From midnight to 7:00AM, it is off peak price.

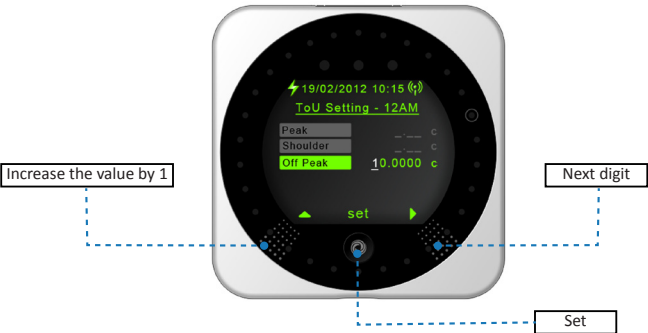


5. Set the price of this price tier

From midnight to 7:00AM, it is off peak price. Select off peak.



6. Set the actual price of this price tier
Off peak price is 10 c/kWh.



7. Set the start time of the next flexible price
From 7:00AM to 03:00PM, it is shoulder price.



8. Set the price of this price tier
From 7:00AM to 03:00PM, it is shoulder price so please select shoulder.



9. Set the actual price of this price tier
Shoulder price is 20 c/kWh.



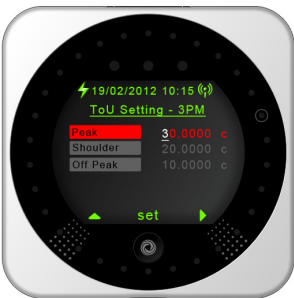
10. Set the start time of the next flexible price
From 03:00PM to 09:00PM, it is peak price.



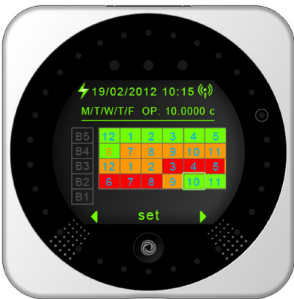
11. Set the price of this price tier
From 03:00PM to 09:00PM, it is peak price so please select peak.



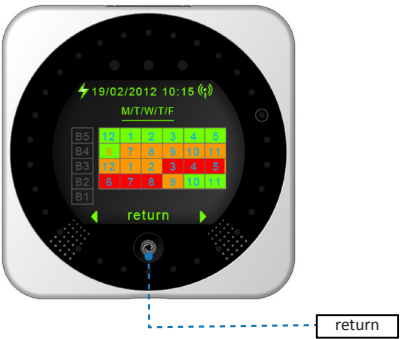
12. Set the actual price of this price tier
Peak price is 30 c/kWh.



13. Set the price for the rest of the day



14. Confirm the day price definition
Move the cursor out of hours, the "set" button should change to "return".



15. Select days

Because weekends share the same tariff structure, please select weekend days.



Define the weekend flexible price

16. Exit

Move the cursor out of days selection, the set button will change to "return". Click "return" to go back to the main menu.



Appendix B: Safety Information

Do not use damaged power cords and plugs, or loose electrical sockets

Do not touch the power cords with wet hands or disconnect the power adaptor by pulling the cord

Do not bend or damage the power cord

Do not touch your device with wet hands

Do not drop or cause an impact to the device

Avoid exposing your device to very cold or very hot temperature. It is recommended to use your device at temperature from 5 °C to 35 °C.

Do not use your device near other electronic devices

Do not use your device near a pacemaker

Do not use your device in a hospital or near medical equipment that can be interfered with radio frequency

Do not use or store your device in areas with high concentrations of dust or airborne materials

Do not store your device near magnetic fields

Do not use or store your device near or in heaters, microwaves, hot cooking equipment, or high pressure containers

Do not disassemble, modify or repair your device

Do not use the device for anything other than its intended use

Do not allow children to use your device

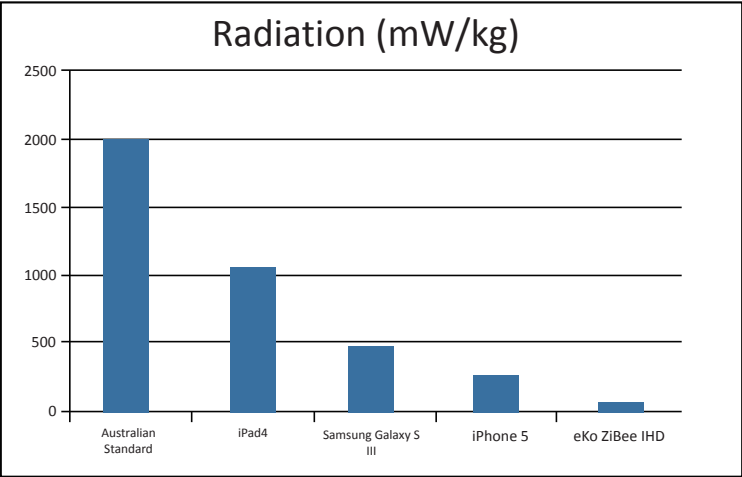
Appendix C: Specific Absorption Rate (SAR) Certification Information

The device meets international guidelines for exposure to radio waves.

eKo IHD is a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) recommended by international and Australian guidelines.

The radio wave exposure guidelines use a unit of measurement known as the Specific Absorption Rate or SAR. The SAR limit for mobile devices is 2000 mW/kg.

Tests for SAR are conducted using standard operating positions with the device transmitting at its highest certified power level in all tested frequency bands. The highest SAR value is 0.989 mW/kg.



Appendix D: Warranty

Interrel Pty Ltd warrants this eKo IHD to be free from defects in materials and workmanship under normal consumer usage for a period of one year from the date of sale. Labour charges for removal and installation of the eKo are the consumer's responsibility. During the warranty period, as the consumer's exclusive remedy for a defective product, all defective parts will be replaced or repaired free of charge. To obtain warranty service, the consumer must return the eKo, freight paid, with a copy of the sales receipt or other proof of purchase that shows the date of sale, to the place of purchase or Interrel Pty Ltd within the warranty period.

The consumer shall NOT have any claim under this warranty, including but not limited to, for repair or adjustment expenses if:

1. The problem is caused by improper operation or storage; misuse, abuse, accident or neglect; contact with liquids, extreme humidity or heat; contact with sand, dirt, food or the like; fire, or other cause, or other acts which are not the fault of Interrel Pty Ltd; or other acts that are outside the course of normal consumer usage.
2. The problem is caused by modification or repair by anyone other than Interrel Pty Ltd.
3. Serial numbers or product labels have been removed, altered or obliterated.
4. Proof of purchase is not presented when requesting warranty service.

This warranty shall not extend beyond the warranty period and is in lieu of all other warranties, including, without limitation, any statutory or implied warranty or condition, including, without limitation, of merchantability or of fitness for a particular purpose, or those arising by custom, usage or trade.

In no circumstances will Interrel Pty Ltd be liable for any direct, indirect, consequential or incidental damages, including without limitation, damages resulting from the use, inability to use, or inaccuracy of the product or loss of data. Repair or replacement as provided under this warranty is the consumer's exclusive remedy for any defects in materials or workmanship of the eKo. The warranty applies only to new products and claims made by the original purchaser as evidenced by a sales receipt or other proof of purchase.

To contact Interrel Pty Ltd, please visit www.interrel.com.au.

Appendix E: Troubleshooting

1. Lost connection and re-connecting

Reconnecting

If the eKo shows this screen below, it means the eKo has lost connection to the smart meter and is trying to reconnect.



To solve this problem, please:

1. Power cycle the eKo IHD
2. Move the eKo closer to your smart meter
3. If the problem persists , contact your IHD supplier

2. Failed to join meter (CA00)

If you see this error message, power cycling the eKo IHD will normally solve this problem. If problem persists, please contact your IHD supplier.

If the eKo shows this screen below, it means the eKo failed to bind itself with the smart meter.



To solve this problem, please:

1. Double check that you provided the correct eKo IHD MAC address and Installation code and try again
2. Double check that you provided the correct National Meter Identifier (NMI) number and try again
3. Move the eKo closer to your smart meter and try again
4. The joining window might have expired, you may need to re-open the joining window from the web portal or contact your IHD supplier and try again

3. Security key failed (0100)

If you see this error message, power cycling the eKo IHD will normally solve the problem. If the problem persists, please contact your IHD supplier.

If eKo shows this screen below, it means the eKo failed to bind itself with the smart meter. It is normally because you are trying to bind the eKo to a new meter which is under development.



To solve this problem, please:

1. Contact your meter manufacturer
2. Contact InterCel

4. Meter re-config required (9400)

If you see this error message, power cycling the eKo IHD will normally solve this problem. If the problem persists, please contact your IHD supplier.

If the eKo shows this screen below, it means your electricity meter is faulty and needs to be re-configured.



To solve this problem, please:

1. Contact your electricity supplier

Notes

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